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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,565	11/20/2001	John H. Keller	V0077/7215WRM	8886

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EXAMINER

VO, TUYET THI

ART UNIT	PAPER NUMBER
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2821

DATE MAILED: 01/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/988,565

Applicant(s)

KELLER, JOHN H.

Examiner

Tuyet Vo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-15, 17-21 and 23 is/are allowed.
- 6) ☒ Claim(s) 16, 22 and 24-26 is/are rejected.
- 7) ☒ Claim(s) 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Specification*

1. The disclosure is objected to under 37 CFR 1.71, as being so incomprehensible as to preclude a reasonable search of the prior art by the examiner. For example, the following items are not understood: the amendment adding to the specification filed November 05, 2003 in order to address the figure 7 illustrated segments of the acceleration electrodes and the deceleration electrode. However, each of segment groups 50-54 and 60-64 are not clearly specified belong to the acceleration or deceleration element. Applicant is required to submit an amendment which clarifies the disclosure so that the examiner may make a proper comparison of the invention with the prior art.

Applicant should be careful not to introduce any new matter into the disclosure (i.e., matter which is not supported by the disclosure as originally filed).

A shortened statutory period for reply to this action is set to expire ONE MONTH or THIRTY DAYS, whichever is longer, from the mailing date of this letter.

### *Drawings*

2. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81. No new matter may be introduced in the required drawing. The drawing filed November 15, 2003 does not provide enough visualization of the invention, for example, the Figure 7 lacks of ion beam direction from the ion source toward the acceleration and deceleration electrodes.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the acceleration electrode and the deceleration electrode being segmented must be shown or the feature(s) canceled from the claim.

27. No new matter should be entered.

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1, 6 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Anderson et al. (US Pat. 5,365,070), hereinafter Anderson.

Anderson discloses an ion optical apparatus as well as method (Fig. 3) for producing a low energy ion beam, the ion beam (21) having a beam plasma (22) at a final ion beam energy, the apparatus comprising:

an acceleration electrode (17) for accelerating the ion beam;

a deceleration electrode (18) downstream of the acceleration electrode for decelerating the ion beam, the deceleration electrode having a voltage (35KV) that is selected to provide a potential barrier to thermal ions in the beam plasma (22) to inhibit thermal ions (which are generated by a very high energy source) from reaching the acceleration electrode, wherein the

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aperture or the deceleration electrode is larger than the aperture of the acceleration electrode (Fig. 3); and

an ion optical element (19) is downstream of the deceleration electrode for inhibiting electrons in the beam plasma (22) from reaching the deceleration electrode (18).

6. Claim 16 is rejected under 35 U.S.C. 102(e) as being anticipated by Miyake et al. (US Pat. 6,335,535), hereinafter Miyake.

Miyake discloses an ion optical apparatus (Fig. 10) for producing a low energy ion beam comprising:

an acceleration electrode (375) for accelerating the ion beam; and

a deceleration electrode (376) downstream of the acceleration electrode for decelerating the ion beam to form the low energy ion beam, wherein both of the acceleration electrode and the deceleration electrode being segments in a direction lateral to the ion beam to define individually controllable electrode segments.

7. Claims 22, 24-26 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Hashimoto et al. (US Pat. 4,870,284), hereinafter Hashimoto.

Hashimoto discloses an ion optical apparatus as well as method (Figs. 1 and 2) for producing a low energy ion beam comprising:

an acceleration electrode (2,3) for accelerating the ion beam;

a deceleration electrode (4); a plasma beam at final ion beam energy

wherein the acceleration electrode being segments in a direction traverse to the beam line, the segments (2, 3) thereof having different voltage applied thereto (Fig. 1A) (meet claim 22);

the acceleration potential is varied traverse with the respect to the beam line to effect correction of beam divergence of the density of a wafer (375) (meet claims 24-26); and

an electron repulsion electrode (5) having a voltage sufficiently negative to substantially prevent electrons from being pulled out of the final beam plasma to the acceleration electrode (Fig. 3B) (meet claim 28).

***Allowable Subject Matter***

8. Claims 1-15 and 17-21 and 23 are allowed.
9. Claim 27 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to provide a voltage application to the deceleration electrode as a potential barrier to thermal ions in the plasma beam to inhibiting thermal ions from reaching the acceleration electrode and an ion optical element downstream of the deceleration electrode for inhibiting electrons in the plasma beam from reaching the deceleration electrode as required in claims 1, 10 and 23. The system is implemented by comprising a potential difference between an acceleration electrode and a deceleration electrode, a positive potential required between the deceleration electrode and a final beam energy to prevent ion beams from diversion to the acceleration, wherein the final beam comprising thermal positive ions and electrons as required in claims 17; or in claim 27 requiring both the acceleration electrode and the deceleration electrode being segmented.

***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuyet Vo whose telephone number is 703 306 5497. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 703 308 4856. The fax phone numbers for the organization where this application or proceeding assigned is 703 872 9306 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

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Tuyet Vo

January 4, 2004